

A wafer measurement station integrated within a process tool has a scatterometry instrument for measuring patterned features on wafers. A wafer handler feeds wafers between a cassette and one or more process stations of the process tool. Wafers presented to the measurement station are held on a wafer support, which may be moveable, and a scatterometry instrument has an optical measurement system that is moveable by a stage over the wafer support. A window isolates the moveable optics from the wafer. The optical measurement system are microscope-based optics forming a low NA system. The illumination spot size at the wafer is larger than a periodicity of the patterned features, and data processing uses a scattering model to analyze the optical signature of the collected light.